SCOTT LABORATORIES

2220 Pine View Way • P.O. Box 4559 • Petaluma, CA • 94955-4559

Fordras Lysozyme

Lysozyme is a naturally occurring enzyme isolated from egg whites. It is used in wine to inhibit lactic acid bacteria. Lysozyme degrades the cell wall of gram-positive bacteria such as *Oenococcus*, *Pediococcus*, and *Lactobacillus*. Due to their protective external membranes, Lysozyme is not effective against gram-negative bacteria like *Acetobacter*. It also has no activity against yeast.

Lysozyme's effectiveness depends not only on the type of bacteria, but also the number of cells present. Unlike SO_2, Lysozyme is more effective at higher pH's when lactic acid bacteria growth is favored.

Lysozyme does not replace SO_2 because it has no anti-oxidative effect. It can, however, be used to help greatly reduce the amount of SO_2 needed to achieve microbial stability over the life of both red and white wines.

Lysozyme can be used in the following applications:

Lysozyme Applications	Reds	Whites	Recommended Dosage					Timing of Addition
			Powdered Lysozyme			22% Lysozyme Solution		
Protection During Stuck and Sluggish Fermentations To encourage yeast growth in the absence of SO_2 while reducing the risk of VA production by lactic acid bacteria.	•	•	250-400 ppm	25-40 g/hL	0.94-1.50 g/gal	114 - 182mL/hL	4.3 - 6.8 mL/gal	Add at first signs of a stuck fermentation
Prevent Growth of LAB in Must and Juice To inhibit spoilage characters due to uncontrolled microbial growth. This is especially important in high pH conditions or with grapes containing rot.	•	•	200 ppm	20 g/hL	0.75 g/gal	91.0 mL/hL	3.4 mL/gal	Add prior to fermentation
Delay MLF/Post-MLF Stabilization To protect wine without the negative effects of SO_2, to allow for maceration or aging, to allow for implantation of selected ML bacteria, or to increase efficiency of Phase I micro-oxygenation. *Delay*	•		100-200 ppm	10-20 g/hL	0.38-0.75 g/gal	46 - 91 mL/hL	1.7 - 3.4 mL/gal	Add at juice stage or immediately after alcoholic fermentation
Stabilize	•		250-500 ppm	25-50 g/hL	0.94-1.90 g/gal	114 - 228 mL/hL	4.3 - 8.6 mL/gal	Add immediately after MLF Completion
Inhibit MLF when Blending Partial and Complete ML Wines	•	•	300-500 ppm	30-50 g/hL	1.10-1.90 g/gal	136 - 227 mL/hL	5.0 - 8.6 mL/gal	Add during blending

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Directions for Lab Scale Additions of Lysozyme

Prepare a 5% solution of Lysozyme by dissolving 5.0 grams of Lysozyme in 80 ml of cool or lukewarm water. When dissolved, bring volume up to 100 mL with DI water. Be sure to mix gently! Lysozyme is fragile and easily denatured by vigorous mixing or hot water. When dissolved, the Lysozyme solution will be a completely clear liquid.

For a 375ml Bottle:

PPM Lysozyme	Milliliters of 5% Lysozyme Solution to Add
50	0.37
100	0.74
150	1.11
200	1.48
250	1.85
300	2.22
400	2.96
500	3.70

Lysozyme Rehydration Procedures

1. Weigh-out the quantity of Lysozyme to be added.

2. Add this quantity of Lysozyme to approximately 5 times its weight in tepid (warm) water.
   - 1 kg Lysozyme to approx. 1.5 gal or approx. 5.7 L water
   - 1 lb Lysozyme to approx. 0.75 gal or approx. 2.8 L water

3. Stir this mixture **gently** for about 1 minute. Avoid foaming!

4. Allow this mixture to 'soak-up' for at least 45 minutes.

5. Repeat steps three and four until the solution has completely dissolved into a clear, colorless liquid.

The information herein is true and accurate to the best of our knowledge, however, this data sheet is not to be considered as a guarantee expressed or implied or as a condition of sale of this product.

FORDRAS

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